CLAIM AMENDMENTS

1. (Previously Presented): A pressure wave apparatus, comprising:

a rotatable rotor having a plurality of passageways therethrough, said rotor having a direction of rotation;

a pair of exit ports disposed in fluid communication with said rotor and adapted to receive fluid exiting from said plurality of passageways, one of said pair of exit ports is a combusted gas exit port for passing a substantially combusted gas from said plurality of passageways and the other of said pair of exit ports is a buffer gas exit port for passing a buffer gas from said plurality of passageways;

a pair of inlet ports disposed in fluid communication with said rotor and adapted to introduce fluid to said plurality of passageways, one of said pair of inlet ports is a working fluid inlet port for passing a working fluid into said plurality of passageways and the other of said pair of inlet ports is a buffer gas inlet port for receiving the buffer gas from said buffer gas exit port and passing the buffer gas into said plurality of passageways, said buffer gas exit port is adjacent to and sequentially prior to said buffer gas inlet port; and

a fuel deliverer adapted to deliver a fuel within said buffer gas inlet port adjacent the rotatable rotor, wherein said fuel deliverer delivers fuel into a first portion of said buffer gas inlet port and not into a second portion of said buffer gas inlet port.

2. (Previously Presented): The pressure wave apparatus of claim 1, wherein said second portion includes a leading portion of said buffer gas inlet port.

3. (Original): The pressure wave apparatus of claim 2, wherein said leading portion is the initial about fifteen percent of said buffer gas inlet port.

4. (Original): The pressure wave apparatus of claim 1, wherein said second portion includes a leading portion of said buffer gas inlet port and a last portion of said buffer gas inlet port.

5. (Original): The pressure wave apparatus of claim 4, wherein said leading portion is defined by the initial about fifteen percent of said buffer gas inlet port and said last portion is defined by the last about ten percent of said buffer gas inlet port.

6. (Original): The pressure wave apparatus of claim 1, wherein said fuel deliverer includes a plurality of fuel delivery devices spaced across said buffer gas inlet port, and wherein at least a portion of said plurality of fuel delivery devices are controllable to selectively deliver fuel.

7. (Original): The pressure wave apparatus of claim 1, which further includes a passageway between said buffer gas exit port and said buffer gas inlet port, and wherein said passageway is adapted to deliver the buffer gas from said buffer gas exit port to said buffer gas inlet port in said direction of rotation.

8. (Original): The pressure wave apparatus of claim 1, wherein the fuel and the working fluid is detonated within said plurality of passageways.

9. (Original): The pressure wave apparatus of claim 1, wherein said second portion is defined by a leading portion of said buffer gas inlet port and a last portion of said buffer gas inlet port; wherein said fuel deliverer includes a plurality of fuel delivery devices spaced across said buffer gas inlet port and adapted to deliver fuel into the buffer gas flowing through said first portion; and wherein the fuel and the working fluid within at least one of said plurality of passageways is detonated.

10. (Original): The pressure wave apparatus of claim 9, wherein the buffer gas is formed by compressing a portion of the working fluid within said plurality of passageways;

which further includes an igniter disposed in communication with the fuel and working fluid within said at least one of said plurality of passageways, and wherein said igniter being operable to initiate the detonation of the fuel and working fluid within said at least one of said plurality of passageways.

11. (Original): The pressure wave apparatus of claim 10, wherein said rotor having a first end and an opposite second end; wherein said buffer gas exit port and said pair of inlet ports are located adjacent said first end, and said combusted gas exit port is located adjacent said second end; and wherein said buffer gas inlet port is adjacent to and sequentially prior to said working fluid inlet port.

12-29 (Cancelled)

30. (Original): A method, comprising;

providing a gas turbine engine including a compressor, a constant volume combustor including a wave rotor, and a turbine, the wave rotor including a passageway having a first end and a second end;

rotating the wave rotor;

introducing a quantity of working fluid into the passageway through the first end of the passageway;

delivering a quantity of fuel into the passageway through the first end of the passageway;

detonating the fuel and a portion of the working fluid within the passageway to create a combusted gas;

creating waves within the passageway to compress a portion of the working fluid within the passageway to define a buffer gas;

discharging a first portion of the buffer gas from the passageway through the first end of the passageway and rerouting the first portion of the buffer gas from said discharge back into the passageway through the first end of the passageway;

discharging a portion of the combusted gas from the passageway through the second end of the passageway to the turbine; and

expanding the portion of the combusted gas within the turbine.

31-33 (Cancelled)